

REMARKS

Claims 1, 2 and 4-10 are in the application, with claim 1 in independent form. No claims are amended, cancelled, or withdrawn via the present Response. Claim 3 was previously cancelled.

Claims 1, 2 and 4-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the “Background Art” section of the instant application (characterized by the Examiner in the instant Office Action as the “Applicant’s Admitted Prior Art”, hereinafter “AAPA”) in view of U.S. Patent No. 5,204,384 to Matsushita et al. (the ‘384 patent).

The Examiner contends that the AAPA “teaches a method of manufacturing a semiconductor device sealed with silicone rubber.” (emphasis added) (See page 2 of the instant Office Action). This is an incorrect assertion of the teachings of the AAPA, which clearly makes no reference whatsoever to silicone rubbers. However, the Examiner contradicts this assertion, by subsequently and properly admitting that the “AAPA fails to teach molding using a sealing silicone rubber composition,” let alone a hydrosilylation reaction-curable silicone rubber composition, as presently claimed. To address this deficiency of the AAPA, the Examiner turns to the ‘384 patent, and contends that the ‘384 patent discloses a hydrosilylation-reaction curable silicone rubber. As such, it is the Examiner’s position that it would have been obvious for one of skill in the art to use the silicone rubber composition of the ‘384 patent in the compression mold of the AAPA because the ‘384 patent teaches its silicone rubbers provide excellent storage stability at room temperature and rapid curing above the softening temperature.

However, the Examiner is reminded that, even after *KSR Int’l Co. v. Teleflex Inc.*, “[t]he mere fact that references can be combined or modified does not render the resultant

combination obvious . . .” *KSR*, 82 USPQ2d at 1396. As such, merely stating that it would be obvious to utilize the hydrosilylation-reaction curable silicone rubber of the ‘384 patent in a compression mold, such as the compression mold of the AAPA, does not render the resulting combination obvious by itself. The Examiner must do more than merely find each element of a claimed combination *somewhere* in the prior art, and then piece each element together in light of the teachings of the present invention to then *reach* the present invention. “This form of hindsight reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result - often the very definition of invention.” (Emphasis added). See *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1275 (Fed. Cir. 2004). The Examiner is using improper hindsight reasoning based on the subject application itself to find the claimed invention obvious, as described in greater detail below.

In addition, as the Examiner is well aware, § 103 forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” (Emphasis added) *KSR* at 1385, 1391 (2007). In *KSR*, the Court noted that “[t]o facilitate review, this analysis should be made explicit.” *KSR* at 1396. (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”). When making an obviousness rejection, Office personnel must therefore ensure that the written record includes findings of fact concerning the state of the art and the

teachings of the references applied, and it is appropriate to include explicit findings as to how a person of ordinary skill would have understood prior art teachings, or what a person of ordinary skill would have known or could have done. See MPEP 2141(II). In particular, the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge. MPEP 2141(II). The Examiner has not set forth any explicit findings as to how a person of ordinary skill would have understood the AAPA and the '384 patent; in fact, one of skill in the art would have no reason to utilize a hydrosilylation curable silicone rubber composition in a compression mold to seal the semiconductor device, as set forth in greater detail below.

As the Examiner surely appreciates, chemistry itself is an inherently unpredictable discipline, as exemplified by both the AAPA and the '384 patent. For example, the '384 patent teaches that cured elastomers formed from silicone compositions coagulate when subjected to long-term heating, which adversely affects the mechanical strength of such cured elastomers. (See column 1, lines 40-50 of the '384 patent). As such, the question of "what is obvious to a person of ordinary skill in the art" must not be answered with mere conclusory arguments relative to a modified prior art reference that oversimplifies the ultimate question. More specifically, an assumption that one of skill in the art would have reasonably been expected to arrive at the instant invention is insufficient and inappropriate, especially where the prior art is silent with respect to such combinations suggested by the Examiner.

Regarding the prior art, the relevant AAPA relates to paragraph [0005] of the subject application, as noted by the Examiner, which describes general compression molding steps.

However, the AAPA completely fails to teach or even suggest the use of a sealing silicone rubber composition in a mold in any way whatsoever, let alone the hydrosilylation reaction-curable silicone rubber composition claimed in the subject application.

The Examiner contends that it would have been obvious to use the silicone rubber composition of the '384 patent in the compression mold of the AAPA "because [the '384 patent] teaches these silicone rubbers provide excellent storage stability at room temperature and rapid curing above the softening temperature." This conclusory statement has little bearing on the real world motivation for one of skill in the art to utilize the silicone rubber composition of the '384 patent in compression molding. In fact, storage stability has little to do with the desired physical properties of a cured resin. Many resins, such as two-component resins, are stable at room temperature until mixed; this fact alone does not make such resins desirable for compression molding in any way whatsoever. This is evidenced by Comparative Example 1 in the subject application, which utilized an epoxy resin. Surely, the epoxy resin utilized in this example has storage stability (due to the fact it did not cure prior to compression molding), and the epoxy resin rapidly cured. In fact, the curing conditions of the epoxy resin were nearly identical to the curing conditions of the hydrosilylation-curable silicone rubbers of the Practical Examples in the subject application. However, the epoxy resin caused semiconductors to warp, which is undesirable. Thus, the factors the Examiner cited in supporting the obviousness rejection are irrelevant in terms of the reasoning employed by one of skill in the art when compression molding, and such factors would not motivate one of skill in the art to utilize a hydrosilylation reaction-curable rubber composition, contrary to the Examiner's assertions.

Moreover, the '384 patent completely fails to teach, disclose, or even suggest molding to form semiconductor devices, let alone compression molding to form semiconductor devices, as claimed in the subject application. In addition, there is no disclosure, teaching, or even a suggestion in the '384 patent to introduce its chemistry into any sort of semiconductor device, let alone a compression mold for sealing a semiconductor device, as claimed in the subject application. While the silicone rubber of the '384 patent is broadly referred to as a "cured molding," it fails to teach or even suggest compression molding, let alone compression molding to form a semiconductor device. As known throughout the art, rubbers are generally cured in molds to retain the desired shape of the rubber. The mere fact that molding is utilized to help rubbers retain shape in no way makes it obvious to utilize hydrosilylation curable silicone rubbers in a compression mold to form a semiconductor device, especially when the prior art fails to reference either a compression mold or a semiconductor device.

In addition, the Examiner focuses on one portion of the AAPA (i.e., paragraph [0005] of the subject application as published), while disregarding the other portions of the AAPA (i.e., paragraphs [0002]-[0004]). The portion of the AAPA which the Examiner has disregarded clearly explains the inherent difficulties of transfer-molding to seal thin packages. The Applicants note that compression molding is but one of many different types of molding. As such, the fact a reference, such as the '384 patent, merely mentions "molding" in passing, it cannot be assumed that such a term encompasses every of molding. Moreover, paragraph [0004] of the AAPA states that "potting . . . make[s] accurate control of sealing-resin coatings more difficult and can easily lead to the formation of voids." As such,

one of skill in the art would have no reason whatsoever to select compositions for potting, such as the silicone rubber composition of the '384 patent, when sealing a semiconductor device.

In view of the foregoing, the Applicants submit that independent claim 1, as well as claims 2 and 4-10, which depend from claim 1, are both novel and non-obvious over the prior art including over the AAPA and the '384 patent, either individually or combination. As such, the Applicants believe the application is now in condition for allowance, and allowance is respectfully requested.

This Response is timely filed; thus, it is believed that no additional fees are due. However, if necessary, the Commissioner is authorized to charge Deposit Account 08-2789 in the name of Howard & Howard Attorneys PLLC for any additional fees or to credit the account for any overpayment.

Respectfully submitted,

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